UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/675,509	09/29/2000	Chandler Fulton	030598.0028.UTL1	1879

30542 7590 08/09/2007

FOLEY & LARDNER LLP
P.O. BOX 80278
SAN DIEGO, CA 92138-0278

EXAMINER	
TON, THAIAN N	

ART UNIT	PAPER NUMBER
1632	

MAIL DATE	DELIVERY MODE
08/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/675,509	FULTON ET AL.	
	Examiner	Art Unit	
	Thaian N. Ton	1632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10 and 33-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *10 and 33* is/are allowed.

6)☒ Claim(s) *34-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/23/07 has been entered.

Claims 10, 33-35 are amended; claims 10 and 33-39 are pending and under current examination.

Applicants have not filed Remarks with this submission; therefore, the Examiner responds to Remarks/Arguments, filed with the after final amendment, on 5/24/07 in this Office action.

Claim Rejections - 35 USC § 112 - Enablement

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 36-39 stand rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for isolated bacterium selected from the group consisting of avirulent *C. sporogenes*, avirulent *C. beijerinckii*, and attenuated, non-pathogenic *S. typhimuriumi*, transfected with a vector comprising a recombinant nucleic acid sequence encoding thiaminase I from *N. gruberi* as set forth in SEQ ID NO: 3, wherein the recombinant nucleic acid sequence is operably linked to a promoter.

The specification does not reasonably provide enablement for the breadth of the claims, which encompass non-isolated bacteria comprising the previously

described vector. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Enablement is considered in view of the Wands factors (MPEP 2164.01(A)). These include: nature of the invention, breadth of the claims, guidance of the specification, the existence of working examples, state of the art, predictability of the art and the amount of experimentation necessary. All of the Wands factors have been considered with regard to the instant claims, with the most relevant factors discussed below.

Applicants' Arguments. Applicants argue that claim 33, as amended, requires each of the elements indicated by the Examiner as being enabled, namely that the claim provides a defined bacterium, transfected with a defined vector, wherein the vector comprises a defined nucleic acid, encoding a defined protein, wherein the nucleic acid is operably linked to a promoter. Thus, Applicants argue that the claimed invention is enabled. See pages 4-5 of the Response.

Response to Arguments. These arguments have been considered, and are found to be partially persuasive. The Examiner notes that it appears that Applicants arguments are directed to claim 36, not claim 33. Although Applicants have now provided specific bacterium, which are transfected with a vector, the enabled scope of the claimed invention is directed to isolated bacterium (see prior Office action). One of the contemplated uses of the bacterium transfected with the vectors of the invention is for *in vivo* therapy. See prior Office actions (pages 7-9 of the Office action mailed 1/25/06; pages 11-14 of the Office action, mailed 7/6/05). The state of the art of gene therapy, *i.e.*, introducing bacterium in order to deliver thiaminase I, in the instant invention, is not considered enabled. See prior Office actions. One of skill in the art must be able to make and use the claimed invention. In the instant case, non-isolated bacterium are not considered to be enabled in view

of the prior rejections of record. It is suggested that Applicants amend the claims to recite that the bacterium are "isolated" to obviate this rejection.

Accordingly, given the state of the art of gene therapy, in particular the introduction of bacterium to an individual to express a specific gene product, in the instant case, thiaminase I, the lack of working examples, or guidance provided by the specification with respect to inducing apoptosis *in vivo* utilizing the bacterium, it would have required undue experimentation for one of ordinary skill in the art to make and use the claimed invention.

Written Description

Claims 34-35 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicants Arguments. Applicants argue that the claims, as now amended, are described, because the Examiner has argued elements which are not in the claims (that the specific nucleic acids would not be capable of inducing apoptosis in vertebrate cells) and that the claims are directed to compositions of matter, and therefore, the construction of these products are known to those of ordinary skill in the art. See page 5 of the Response.

Response to Arguments. These arguments are not persuasive. Applicants have now amended the claims, such that the nucleic acid sequence is no longer required to encode thiaminase I from *N. gruberi*, and that the nucleic acid sequence is at least 90% identical to a portion at least 200 nucleotides in length of the *N. gruberi* thiaminase sequence, as set forth in SEQ ID NO: 3.

The Examiner's interpretation of claim 34 is as previously stated:

1. SEQ ID NO: 3 is 1068 nucleotides in length.

2. 200 nucleotides of the total length is approximately 18.7%

3. 90% identical to an equal length of 200 nucleotides is 180 nucleotides.

Thus, Applicants are claiming a sequence that is at least 180 nucleotides identical to an equal length sequence that is only 18.7% of the total length of SEQ ID NO: 3. As stated previously, the specification provides sufficient written description for SEQ ID NO: 3, which encodes thiaminase I from *N. gruberi*, the specification fails to describe the nucleic acid sequences that are encompassed in claims 34-35 to indicate that Applicants had possession of the invention. In particular, the nucleic acids of claims 34-35 fail, although having a particular nucleic acid structure, fail to be described with a particular function, to describe these nucleic acids. There is no guidance as to what the function of nucleic acid sequences would be.

The question is whether or not Applicants, at the time the application was filed, were in possession a representative number of purified, enriched, or isolated nucleic acid sequences, wherein the nucleic acid sequence is at least 90% identical to at least 200 nucleotides in length of the *N. gruberi* thiaminase sequence, as set forth in SEQ ID NO: 3.

Regents of the University of California v. Eli Lilly, 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997). In *Lilly*, the claim(s) to rat cDNA was required to encoded insulin. Hence, all of the cDNA were functionally limited to those that encoded a specific protein, insulin. However, in the instant case, Applicants have now amended the claims such that they no longer have a required function. Claims 34-35 encompass a genus of nucleic acids, are not limited functionally, or by any common characteristics. In *Lilly*, the court, citing *Fiers v. Revel* (984 F.2d 1164, 1171, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993), expressed that "[a]n adequate written description of a DNA, such as the cDNA of the recombinant plasmids and microorganisms of the '525 patent, 'requires a precise definition, such as by

structure, formula, chemical name, or physical properties,' not a mere wish to plan for obtaining the claimed chemical invention."

In this respect, one could to state that a claim drawn to rat cDNA, though embracing a plurality of species, were deemed "described" by their "physical properties," that is, they all were limited those which encoded insulin. In the instant situation, Applicants have not disclosed structures of the nucleic acid sequences as set forth in claims 34-35, nor have Applicants described physical properties to which such species would share.

Accordingly, it is maintained that the claims fail to be described by the as-filed disclosure.

Claim Rejections - 35 USC § 112

The prior rejection of claims 10 and 33 under 35 U.S.C. 112, second paragraph, is withdrawn in view of Applicants' amendments and remarks.

Conclusion

Claims 10 and 33 are allowed.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Thaian N. Ton whose telephone number is (571) 272-0736. The Examiner can normally be reached on Monday through Thursday from 7:00 to 5:00 (Eastern Standard Time). Should the Examiner be unavailable, inquiries should be directed to Peter Paras, SPE of Art Unit 1632, at (571) 272-4517. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the Official Fax at (571) 273-8300. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Thaian N. Ton/
Primary Examiner
Art Unit 1632